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L6: Entry 24 of 25

File: JPAB

Feb 20, 1986

DOCUMENT-IDENTIFIER: JP 61035585 A

TITLE: SEMICONDUCTOR LASER DEVICE

Abstract (2):

CONSTITUTION: Diffraction gratings having different pattern dimensions and a constant period of about $2,300\text{\AA}$; are formed all over the surface of an N type InP substrate 1 by X-ray lithography using a metal pattern as a mask. A diffraction grating having a depth of 400\AA ; and a width which varies in a range from $300\sim 1,500\text{\AA}$; is transferred by employing the RIE method. An N type InGaAsP light guide layer 2, an InGaAsP active layer 3, a P type InGaAsP buffer layer 4, a P type InP layer 5 and InGaAsP surface layer 6 are laminated. A P-side electrode 8 and an N-side electrode 9 are respectively deposited on the upper and lower surfaces by evaporation, and cleavage is effected to obtain a desired semiconductor laser device. In this device, an average refractive index near the center of the cavity is larger than those near both ends of the cavity. Therefore, an oscillation mode is selectively obtained at a wavelength which is shorter than the Bragg wavelength, and the laser device operates in a single mode.